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AIR MOBILITY COMMAND

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CIVIL RESERVE AIR FLEET LOAD PLANNING GUIDE LOCKHEED L-1011

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This volume implements AFPD 24-2, Preparation and Movement of Air Force Materiel, and provides information needed to load plan a portion of the Civil Reserve Air Fleet (CRAF). Aircraft discussed in this volume is the wide-body Lockheed L-1011. Provisions of this volume applies to Active Duty, National Guard, Military Reserve Units and other government agencies while utilizing commercial aircraft during contingencies.

This volume of AMCP 24-2 is intended for use as a load planning guide. Equipment listed is dimensionally compatible with all Lockheed L-1011 aircraft and cargo areas discussed. Final approval of the procedures in this publication, however, ultimately rests with the individual contractor providing airlift services to the DoD. When new or additional information is received from the manufacturer, it will be provided as a change to this publication.

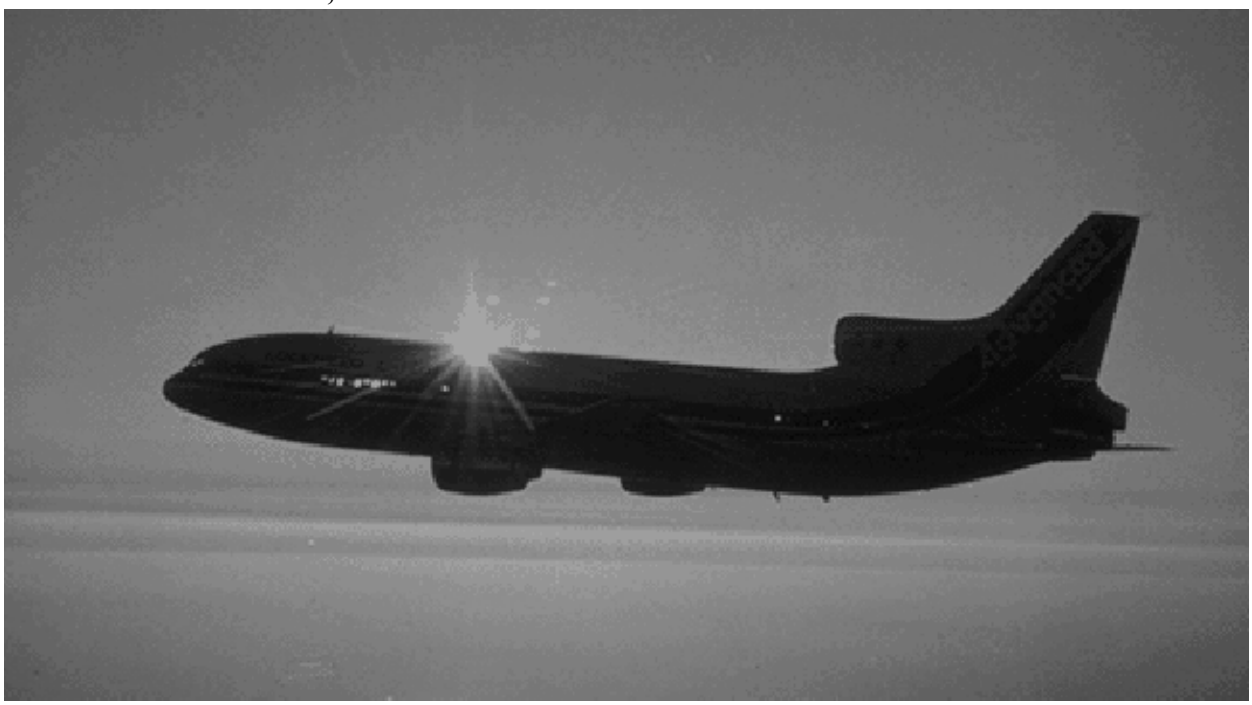
SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

The information contained herein is identical to the information in the previous pamphlet broken down into a more manageable file size. No data has changed. Users of this volume should print volume one which deals with the Administration, Policies, Specialized Loading Support Equipment, and Passenger, and Baggage Loading.

1. General Description: The Lockheed L-1011 is a wide-body, long-range, tri-jet passenger aircraft. The L-1011 is normally configured to carry from 246-330 passengers. Variations on passenger seats depend upon aircraft series, location of galley, spacing requirements of the seats, and contract requirements. A cargo version of the basic L-1011-1 (S/N 1012) was made available for military use in 1995 along with eight former British aircraft that were converted to the cargo configuration. **Figure 2.** and **Figure 3.** show the general dimensions and characteristics of the L-1011. **Figure 4.** and **Figure 5.** provide critical ground clearance information for personnel working under or around the aircraft. Notice that these figures represent information on the two different series aircraft; i.e. the –1/-100/–200, and the –500 respectively.

Figure 1. Lockheed L-1011, Tri Star.



2. Passenger Seating. Passenger configuration and seating capacity vary greatly by aircraft series, model, and individual carrier. The Joint Service Capabilities Plan (JSCP) uses 145 passengers per airplane for the L-1011-100 and 205 passengers for the L-1011-500 for wartime planning, based on 400 pounds per individual over a 3500 NM leg. **Figure 6.** through **Figure 8.** provide typical seating arrangements that may be seen on CRAF L1011 (–1/ -100 / –200 series) aircraft while **Figure 9.** and **Figure 10.** show similar information for the –500 series. Passenger payload capabilities for each model are listed in **Attachment 2**.

3. Lower Lobe Compartments. There are three lower lobe Compartments on the L-1011. The Forward lower lobe (FLL), center lower lobe (CLL), and the aft bulk compartment (ABC). The size of these compartments and access doors vary with aircraft model and series (see **Figure 11.** through **Figure 17.** for dimensions and capacities). There are no restraint mechanisms available to secure 463L pallets, therefore the user should plan to bulk load all available compartments.

4. Loading Sequence. The carrier determines loading sequence for establishing proper center of balance.

5. Cargo Loading. The –200 F series is the only freight carrying L-1011 in the CRAF inventory. The last four figures (**Figure 18.**, **Figure 19.** and **Figure 20.**) address the Cargo Door, the floor schematic and list of "Maximum Pallet Position Gross Weights" allowed on the floor.

6. Cargo Compartments, General Description. Cargo compartments are provided both above and below the cabin floor, each compartment having its own power operated door.

6.1. The cabin cargo compartment which meets the FAR Part 25.857 Class E requirements is equipped with a floor level handling and restraint system which will accommodate a variety of pallet configurations. This system is not power operated.

6.2. The Main Cabin Cargo Compartment can accommodate 26 463L 88" X 108" pallets when built to fit within the contour of the aircraft fuselage. (See Figure 7.13 for contour limits.)

Figure 2. L-1011 General Information (All Models).

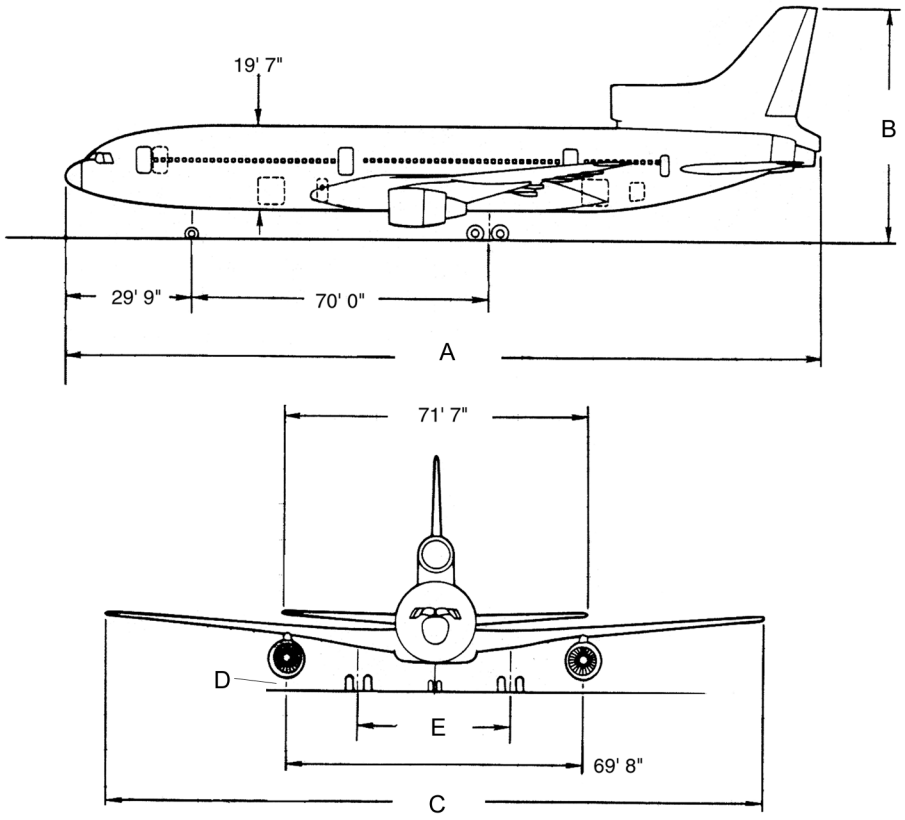


Figure 3. L-1011 General Information, Top View

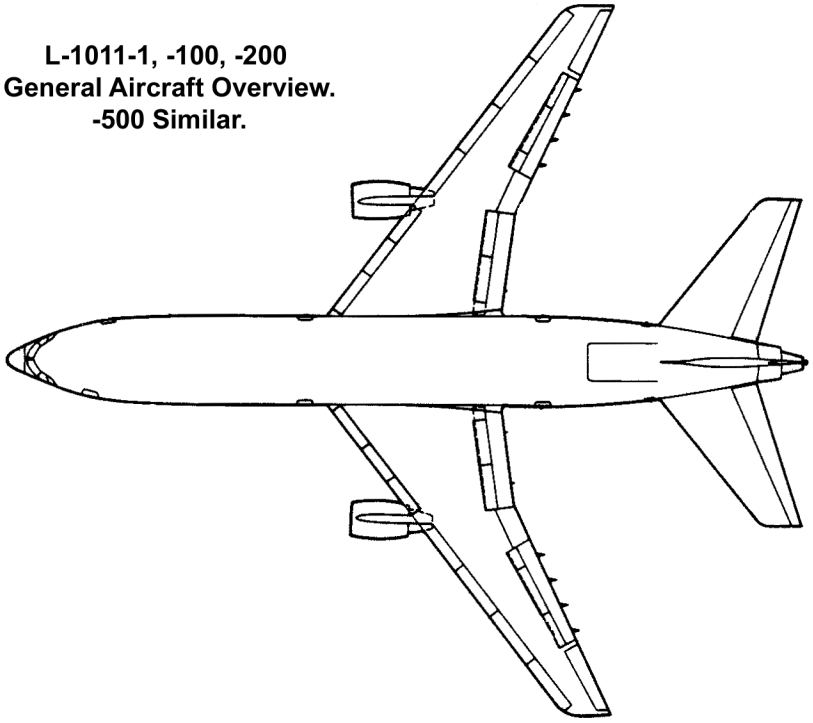


Table 1. General Airplane Dimensions. L=1011 –1, -100. –200 Series

Aircraft	A	B	C	D [1]	E	Turning Radius [2]	Rwy 180 Turn [3]	Min Rwy Width [4]	Min Txwy Width [4]	Fuel Gal/Hr [5]	Block Speed [5]
L1011-1/50	177'2"	55'4"	155'4"	35"	36'0"	121'3"	141'3"	90'	75'	2570	460
L1011-100/200	177'2"	55'4"	155'4"	35"	36'0"	121'3"	141'3"	90'	75'	2570	460
L-1011-500	164'2"	55'10"	164'4"	35"	36'0"	122'	127'6"	90'	75'	2385	465

Aircraft	Design Weights				Max Payload [6]	Contract ACL/Pax	Seats [7]	Pallets		LCN [1]	Gear Type
	Max T/O	Max Land	Zero Fuel	Operating				Mil 88x108	Comm 88x125		
L1011-1	430,000	368,000	335,000	242,000	46.5	---	250-400	----	----	71	TT
L1011-50	450,000	368,000	335,000	242,500	46.3	---	250-400	----	----	73	TT
L1011-100 /200F	466,000	368,000	338,000	246,000(100) 248,000(200)	45.8	---	250-400	None	5 8 LD3 4 LD11	74	TT
L-1011-500	510,000	368,000	338,000	245,000	46.1	---	230-300	---	---	80	TT

NOTES:

1. Based on maximum taxi weight, rigid pavement with p=30, and mid CG.
2. From pivot point on aircraft to most distance point on aircraft.
3. Based on distance needed for wheels to remain on runway for a 180º turn.
4. To be used only as a guide. Individual carrier will make final determination.
5. Based on a 3500 NM leg.

6. Maximum payload is based on aircraft structural limitations

Figure 4. Ground Clearance Dimensions (Models L-1011-1, -100, -200).

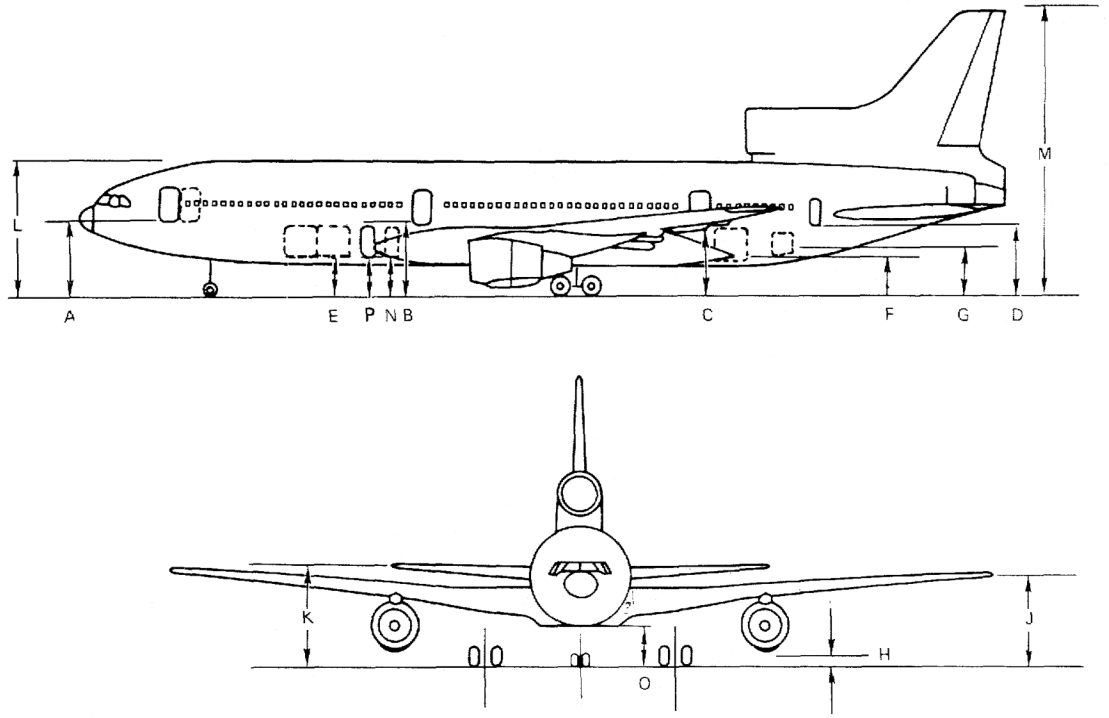


Table 2. Ground Clearances Model L-1011-1, -100, -200.

VERTICAL CLEARANCES				
	TYPICAL OPERATING WEIGHTS EMPTY CG @ 25% MAC		MAXIMUM RAMP WEIGHT CG @ 25% MAC	
	FT. / IN	METERS	FT. / IN	METERS
A	15 - 6	4.72	15 – 2	4.62
B	15 – 6	4.72	15 – 1	4.60
C	15 – 5	4.70	14 – 11	4.55
D	15 – 4	4.67	14 – 9	4.50
E	9 – 4	2.85	8 – 11	2.72
F	9 – 3	2.82	8 – 9	2.67
G	9 – 4	2.85	8 – 10	2.69
H	3 – 4	1.02	2 – 11	0.89
J	17 – 11	5.46	16 – 1	4.90
K	18 – 8	5.69	18 – 3	5.56
L	26 – 11	8.20	26 – 7	8.10
M	55 – 10	17.02	55 – 4	16.87
N	8 – 8	2.64	8 – 2	2.49
O	7 – 3	2.21	7 – 0	2.13
P	8 - 8	2.64	8 - 2	2.49

Figure 5. Ground Clearance Dimensions (Models L-1011-500).

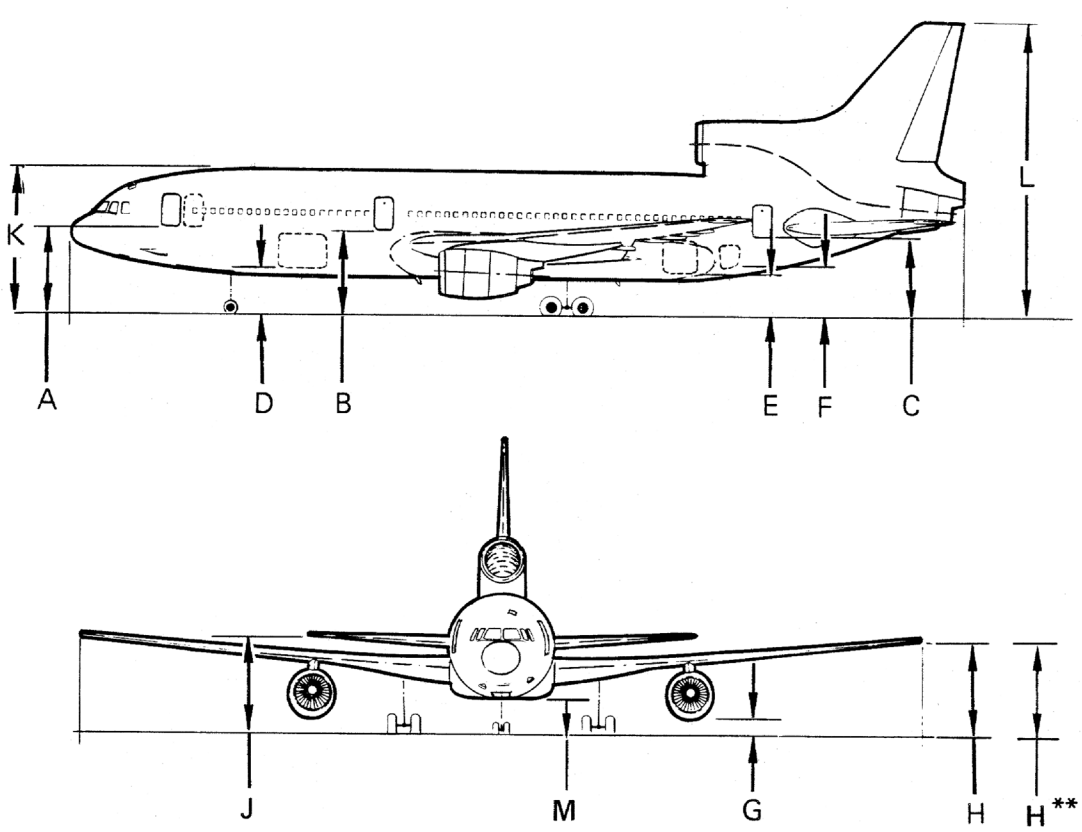


Table 3. Ground Clearances Model L-1011 –500.

VERTICAL CLEARANCES				
	TYPICAL OPERATING WEIGHTS EMPTY CG @ 25% MAC		MAXIMUM RAMP WEIGHT CG @ 25% MAC	
	FT. / IN	METERS	FT. / IN	METERS
A	15 - 6	4.72	15 – 2	4.62
B	15 – 6	4.72	15 – 1	4.60
C	15 – 5	4.70	14 – 11	4.55
D	9 – 4	2.85	8 – 11	2.72
E	9 – 3	2.82	8 – 9	2.67
F	9 – 4	2.85	8 – 10	2.69
G	3 – 4	1.02	2 – 11	0.89
H	17 – 11*	5.46	16 – 1*	4.90
H**	18 – 8*	5.69	16 – 10*	4.90
J	18 – 8	5.69	18 – 3	5.56

VERTICAL CLEARANCES				
	TYPICAL OPERATING WEIGHTS EMPTY CG @ 25% MAC		MAXIMUM RAMP WEIGHT CG @ 25% MAC	
	FT. / IN	METERS	FT. / IN	METERS
K	26 – 11	8.20	26 – 7	8.10
L	55 – 10	17.02	55 – 4	16.87
M	7 – 3	2.21	7 – 0	2.13
•* Approximate Dimensions with Empty and Full Fuel Tanks •**H is L1011-500 Extended Wing				

Figure 6. Seating factors for L-1011 Models 100 and 200. Numbers are for a typical seating arrangement. See paragraph (2.) for passenger factors. Interior Passenger Arrangements, 256 Passengers (Models L-1011-1, -100, -200).

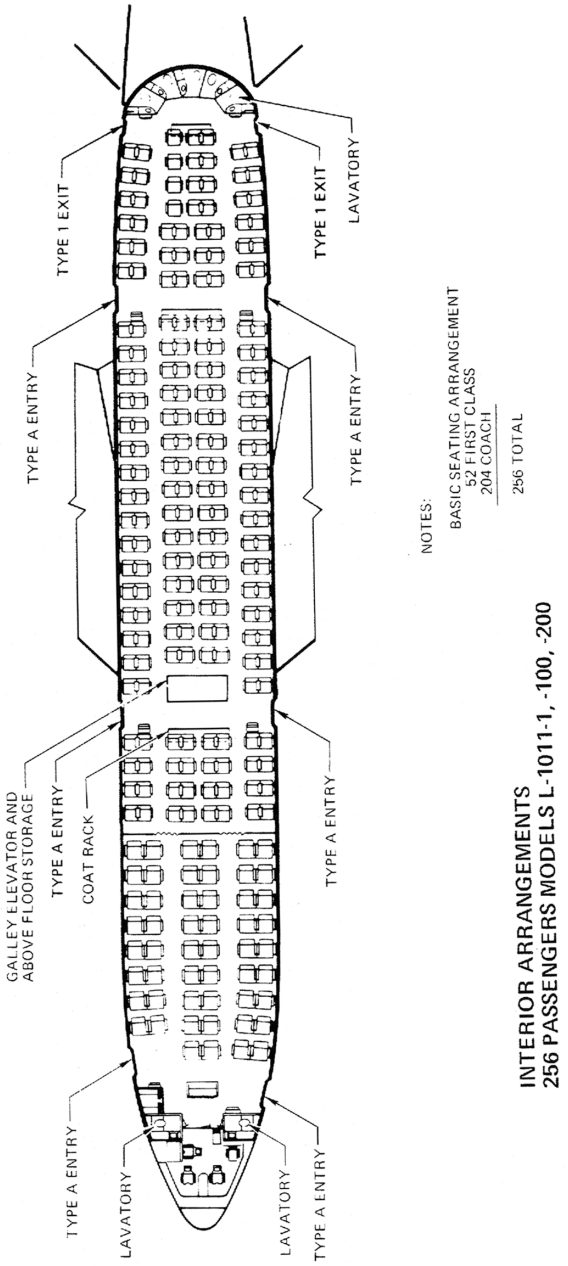


Figure 7. Alternate Passenger Arrangements. 279 and 330 Passengers (Models L-1011-1, -100, -200).

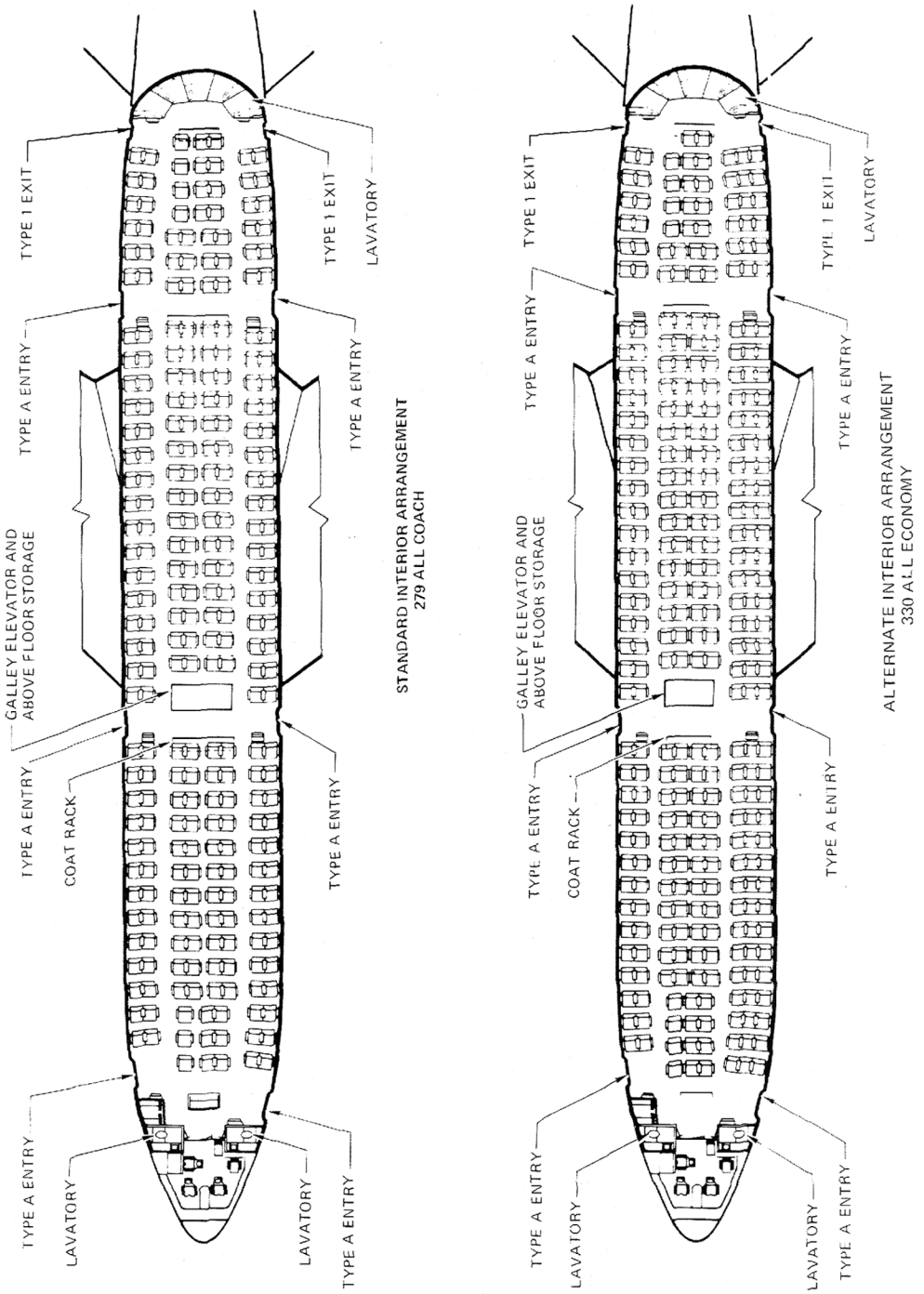


Figure 8. Alternate Passenger Arrangements. 280 and 400 Passengers (Models L-1011-1, -100, -200.

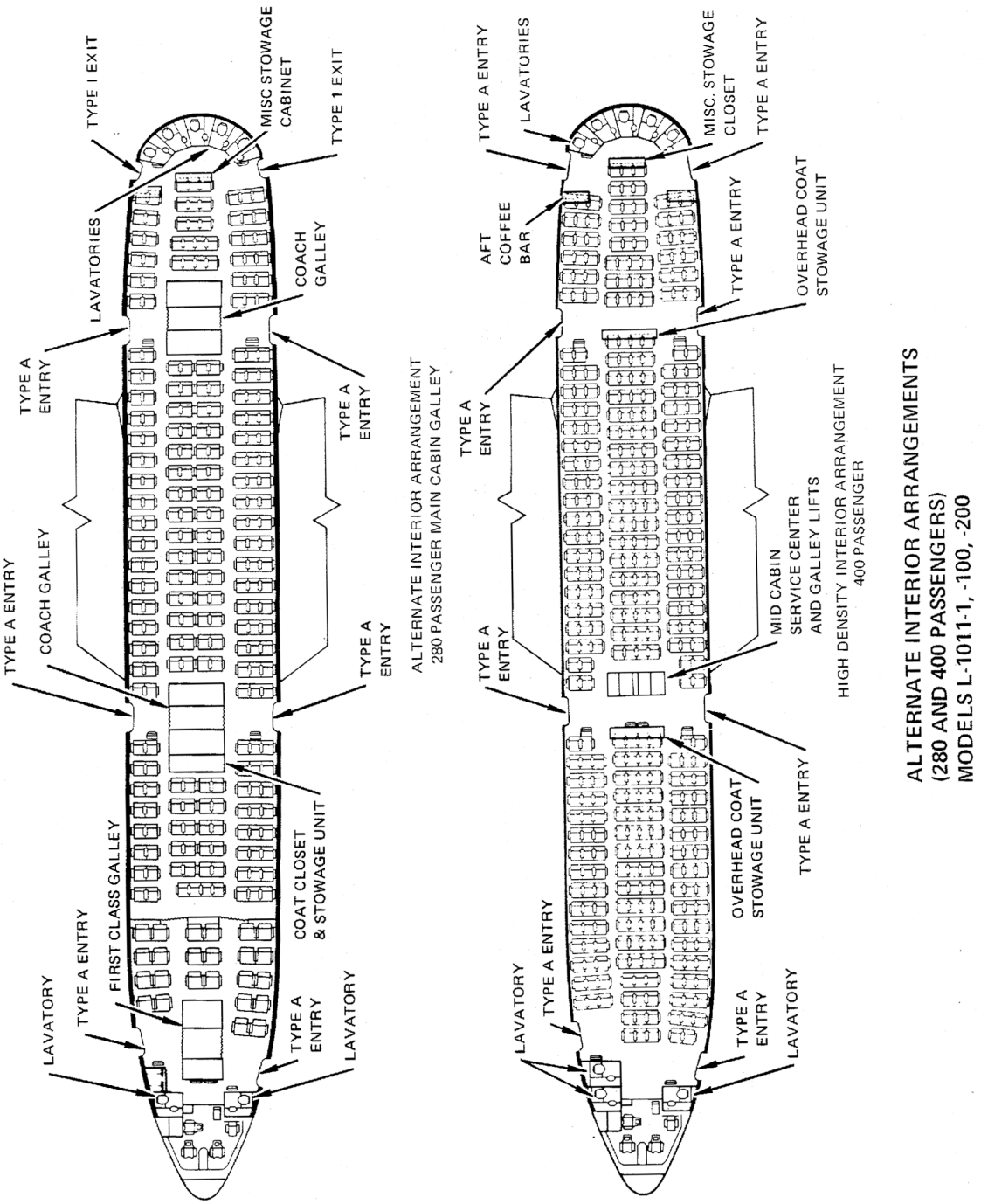


Figure 9. Alternate Passenger Arrangements. 270 and 330 Passengers (Models L-1011-500)

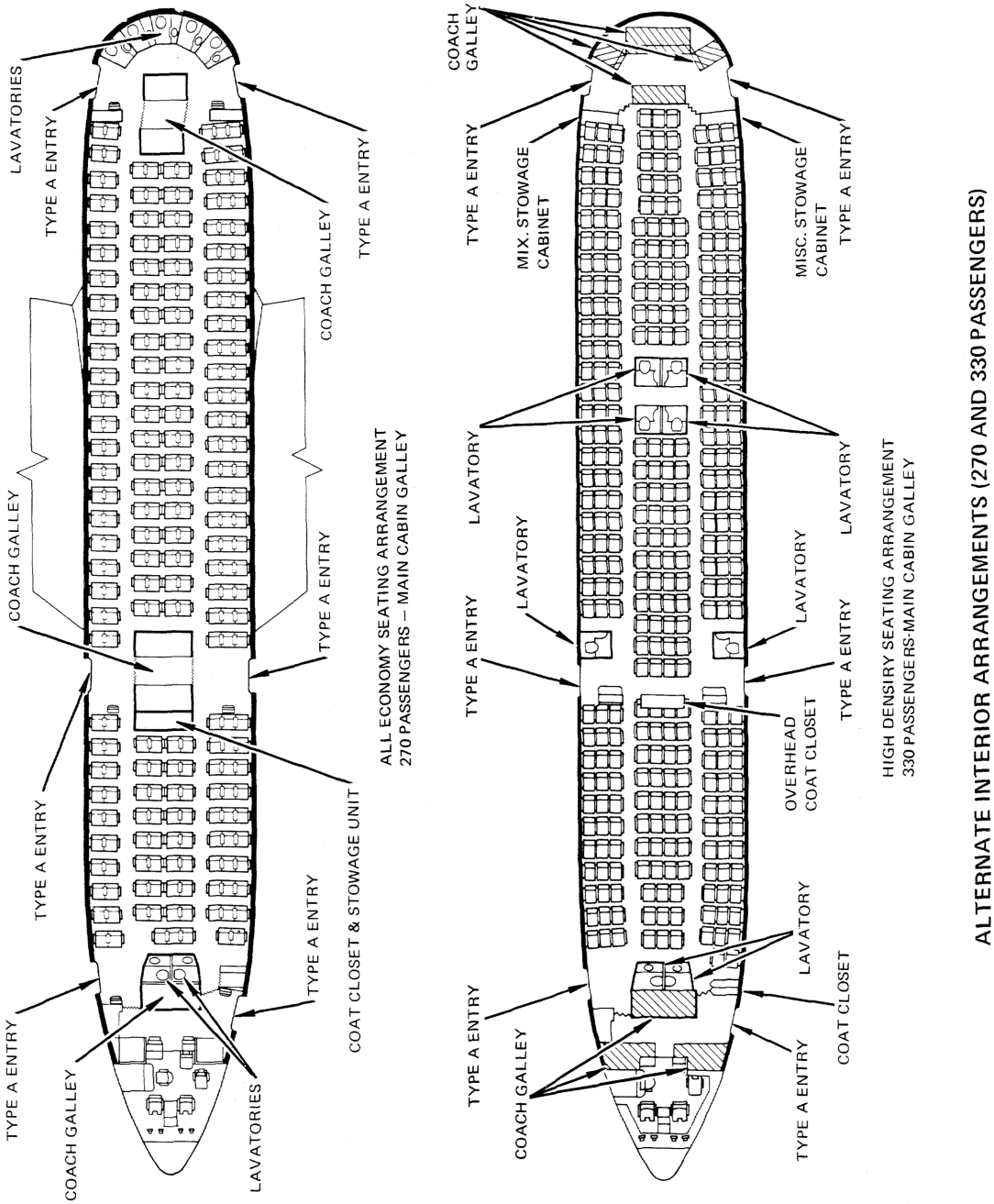


Figure 10. Interior Passenger Arrangements. 246 Passengers (Models L-1011-500)

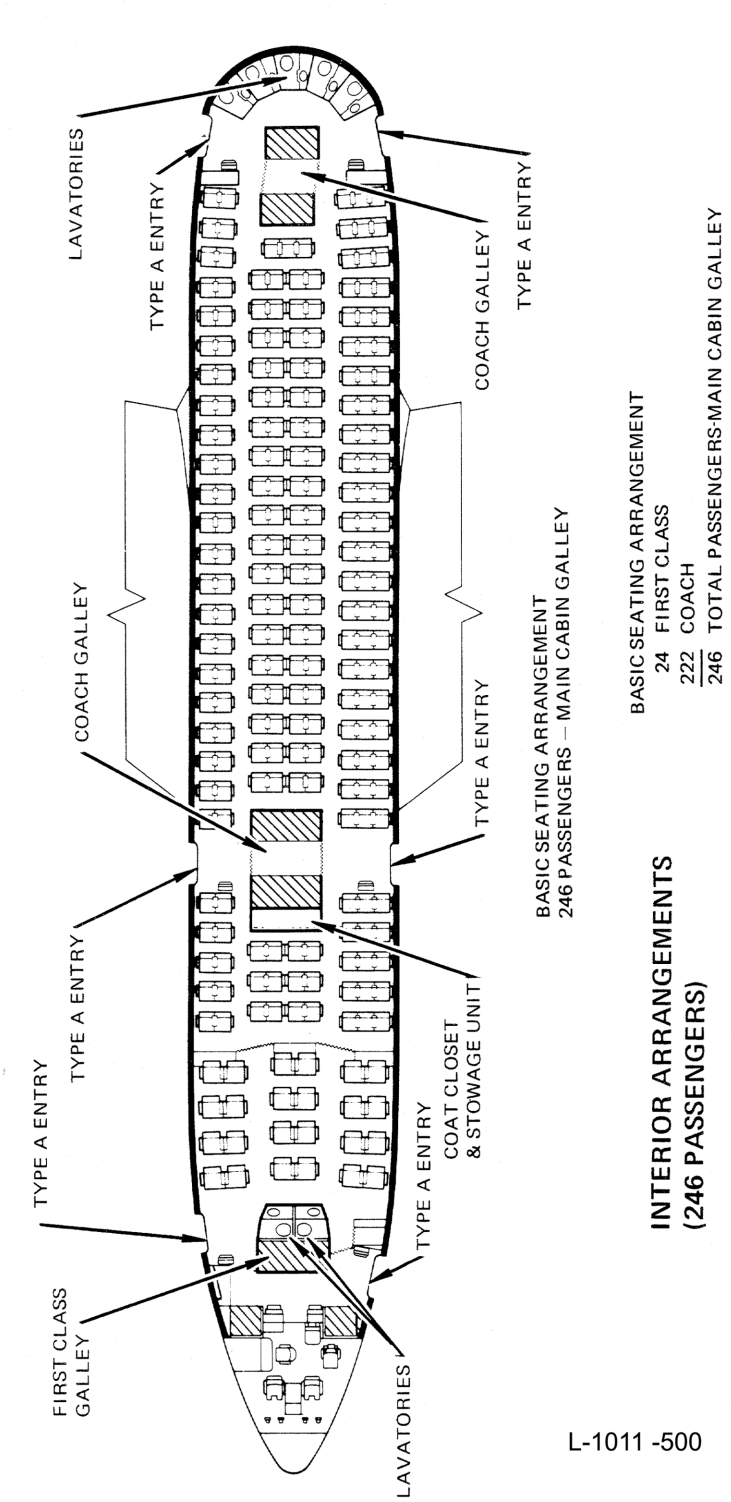
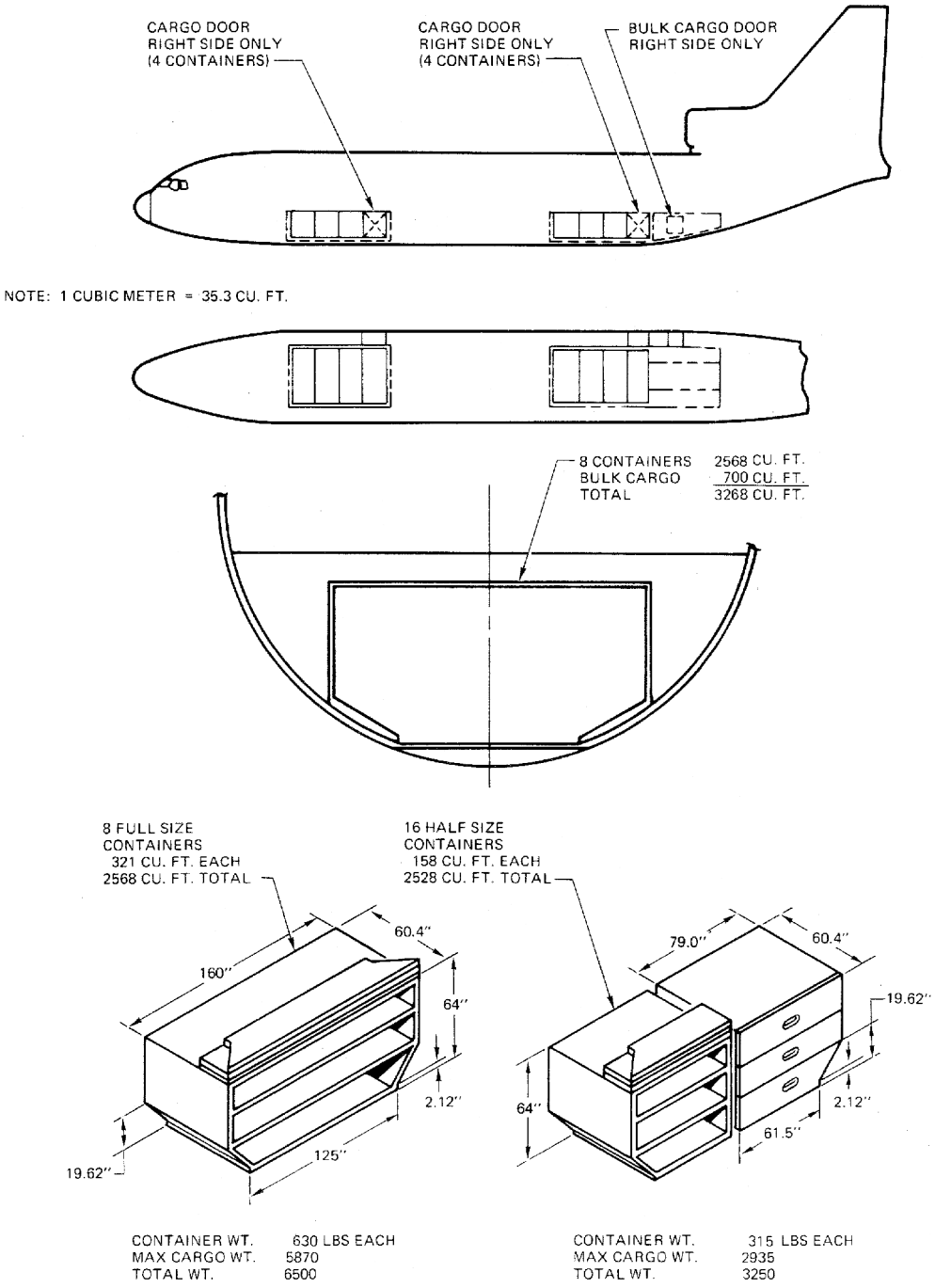
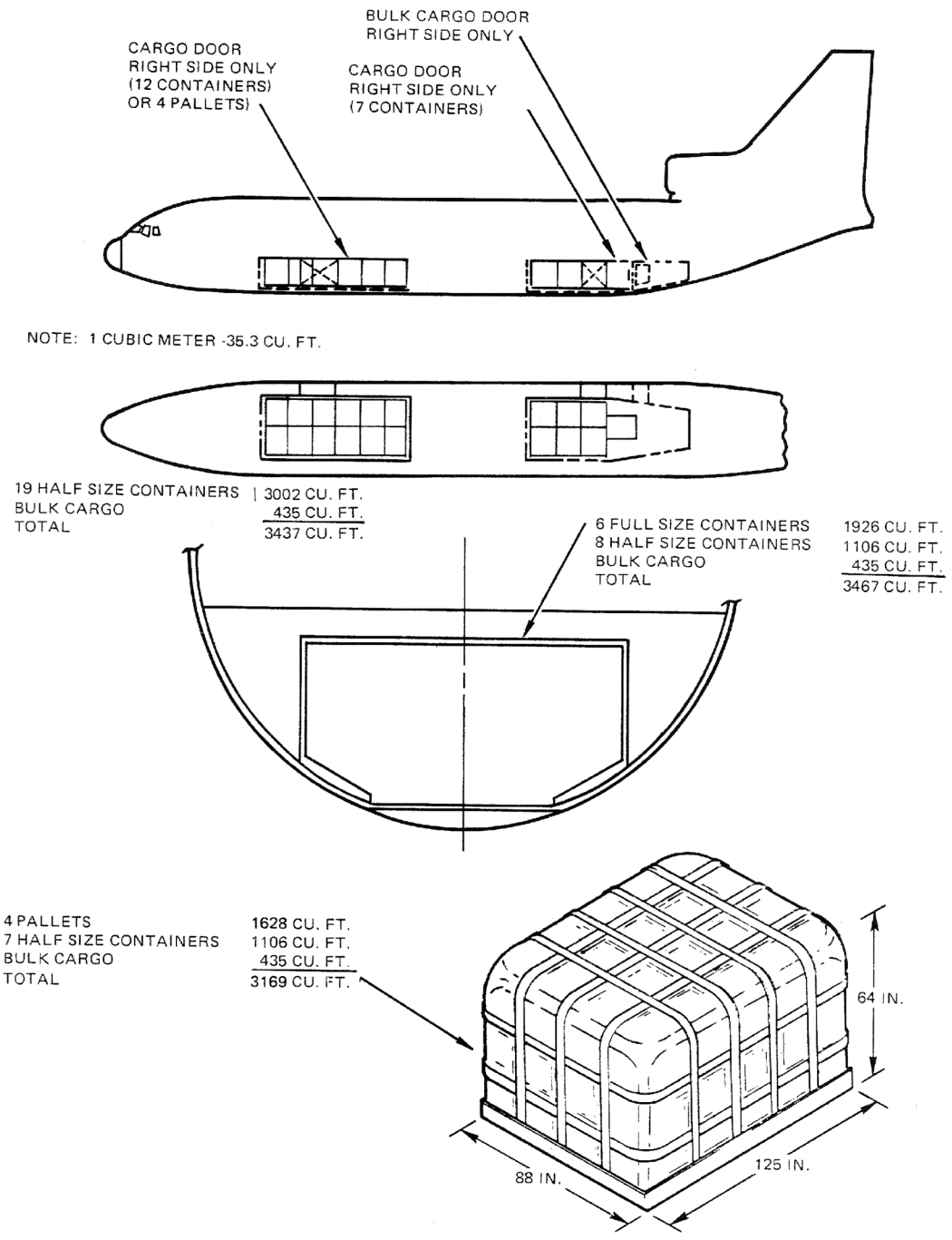


Figure 11. Lower Compartment Containers. (Models L-1011-1, -100, -200)



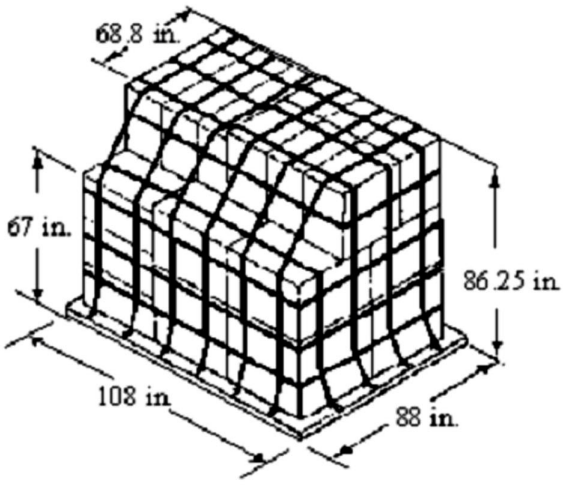
LOWER COMPARTMENT CONTAINERS
MODELS L-1011-1, -100, -200

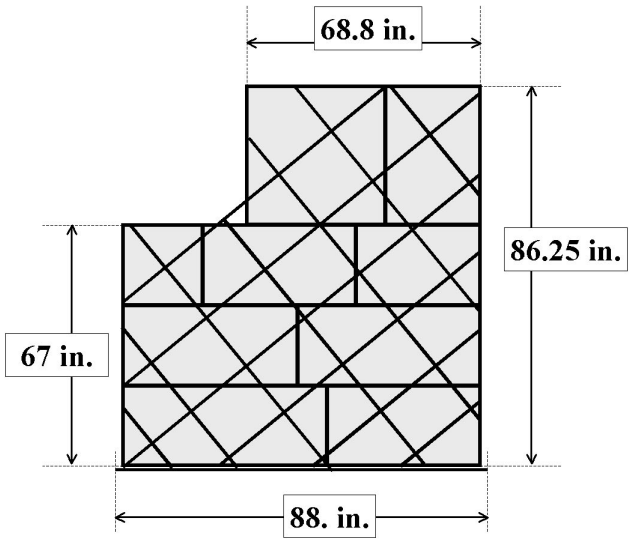
Figure 12. Lower Compartment Containers and/or Pallets. (Models L-1011-500)



LOWER COMPARTMENT CONTAINERS/PALLETS
MODEL L-1011-500

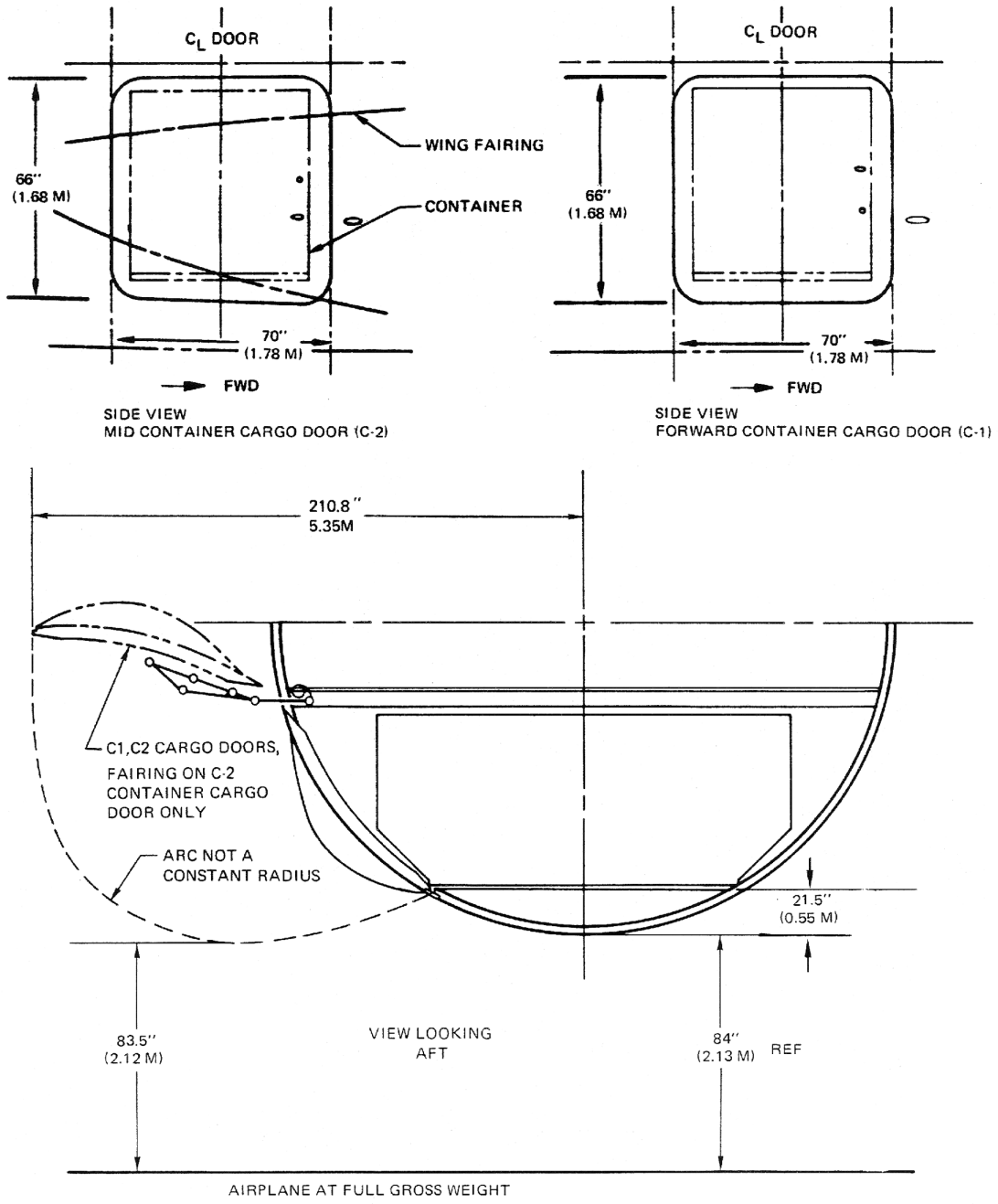
Figure 13. 463L Bulk Cargo Pallet Dimensions for a -200 Series Aircraft. (Models L-1011 -200)





This example of a Bulk Cargo pallet contour Should be followed for all pallets loaded in the Cabin Cargo Compartment on Configuration "C" aircraft. This contour affords 423 cu. ft. on each pallet. See Figure 7.19 for the maximum gross weight allowed.

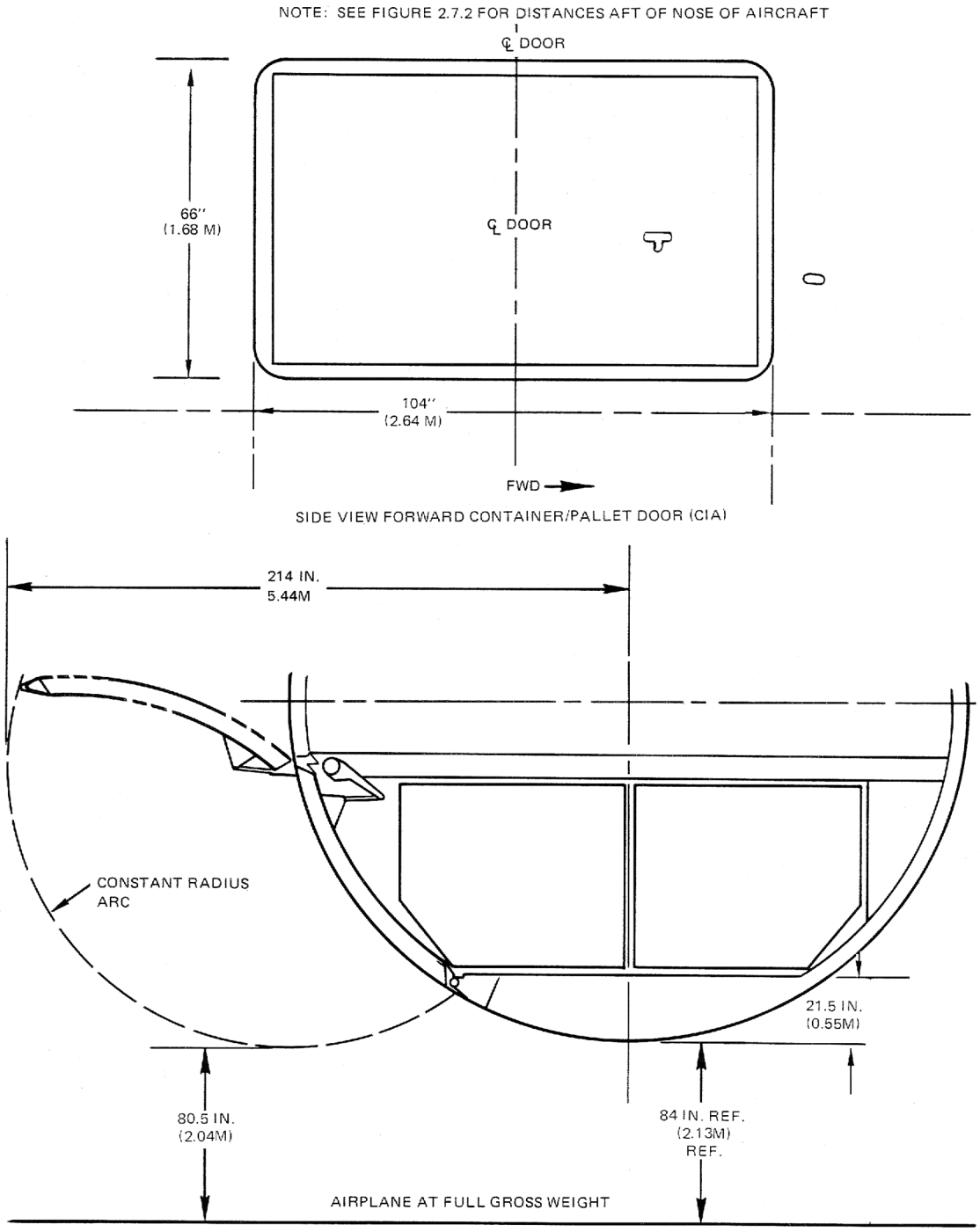
Figure 14. Clearances, Cargo Container Door. Forward and Mid – Series –1, -100, -200.



CLEARANCES, CARGO CONTAINER DOOR FORWARD AND MID
MODELS L-1011-1, -100, -200

Figure 15. Clearances, Cargo and/or Pallet Container Door Forward. Model L-1011-500

NOTE: (This is Optional and may be installed on Models L-1011-1, 100, 200)



CLEARANCES, CARGO/PALLET CONTAINER DOOR FWD
MODELS L-1011-500 OPTIONAL: MODELS L-1011-1, -100, -200

Figure 16. Clearances, Cargo Container Door Mid. (Models L-1011 -500)

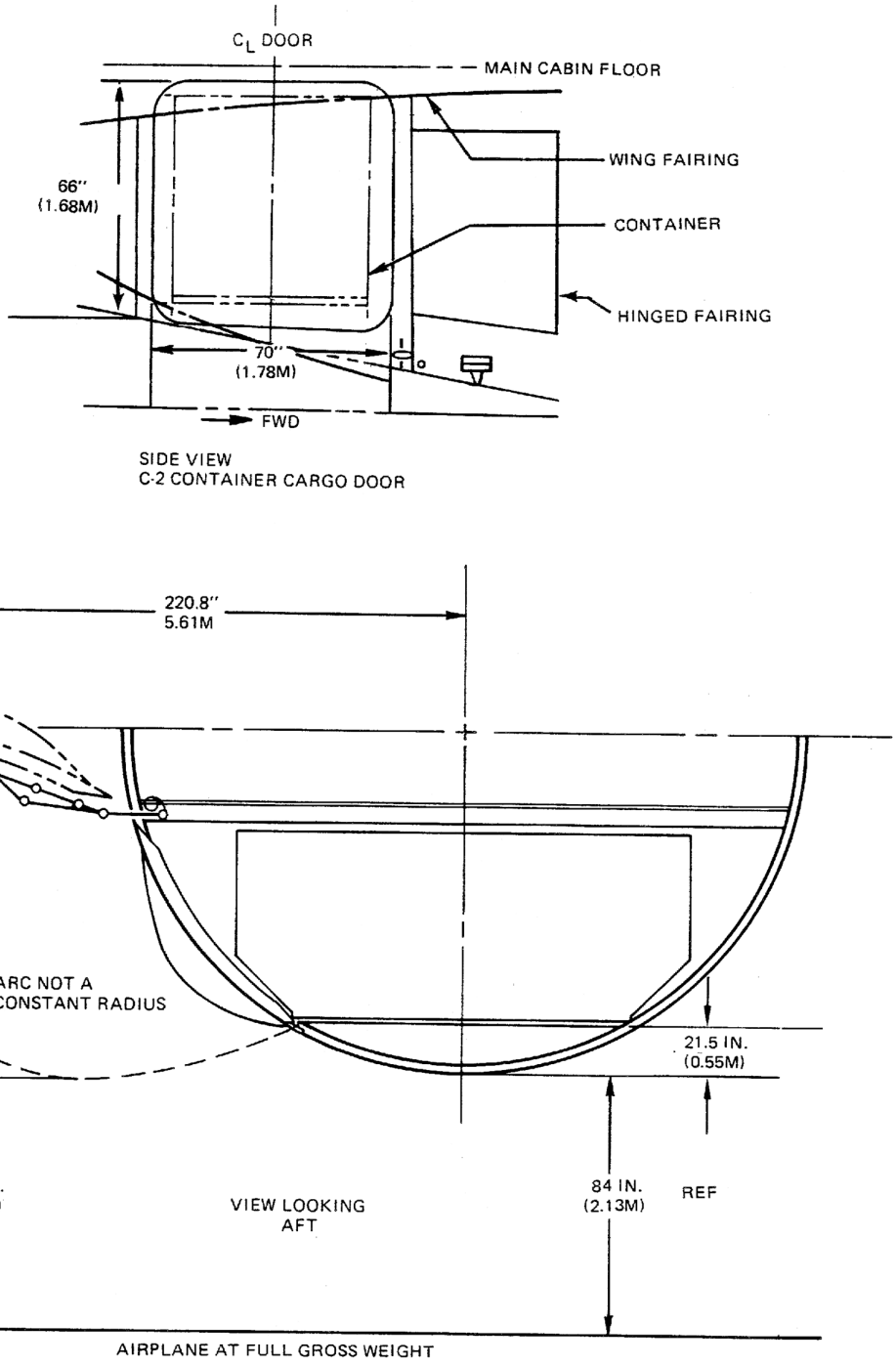


Figure 17. Clearance, Bulk Cargo Door. (L-1011 –1, -100, -200. The –500 is very similar)

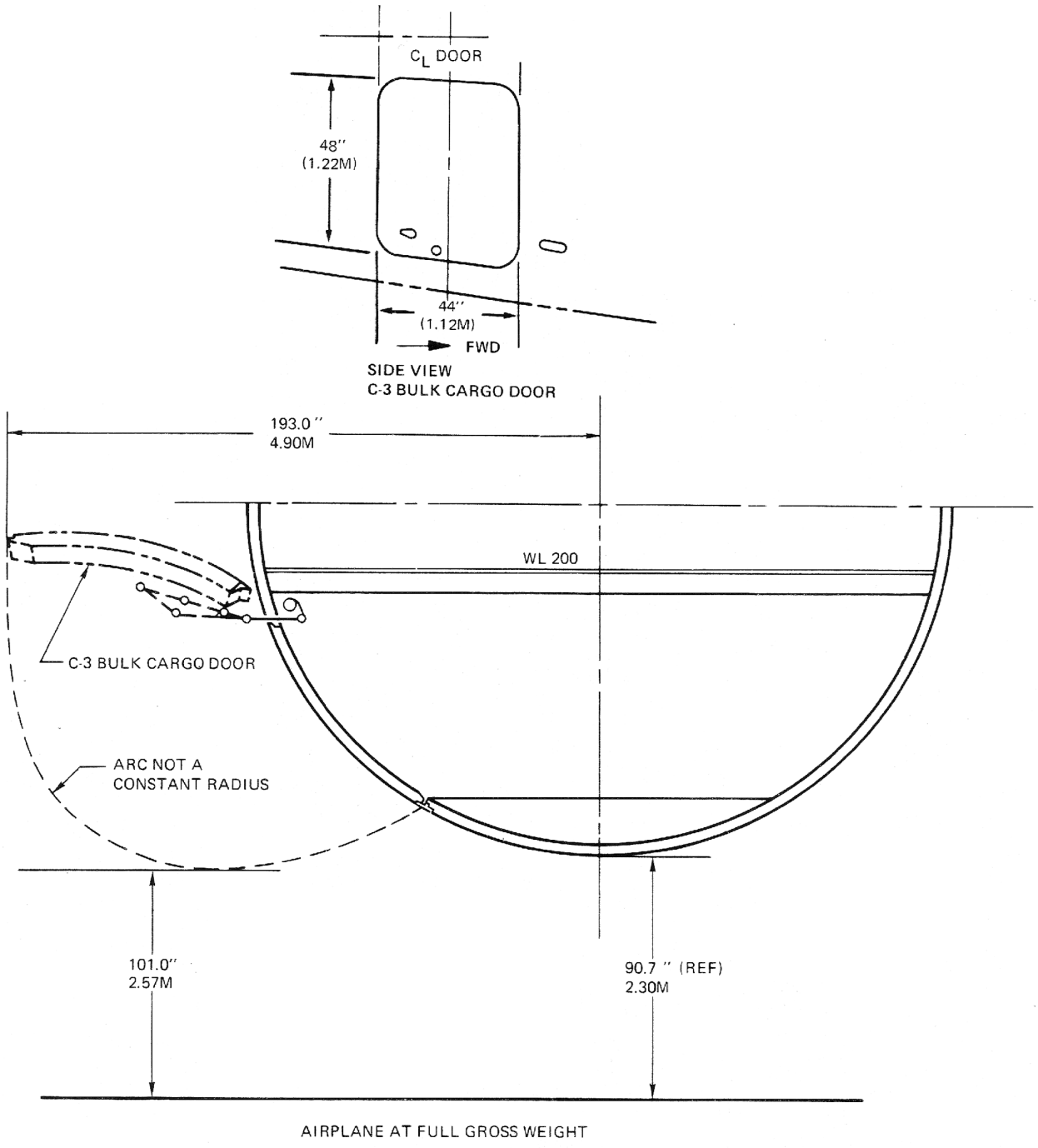


Figure 18. Cabin Cargo Door Opening Size (Models L-1011-200-F only)

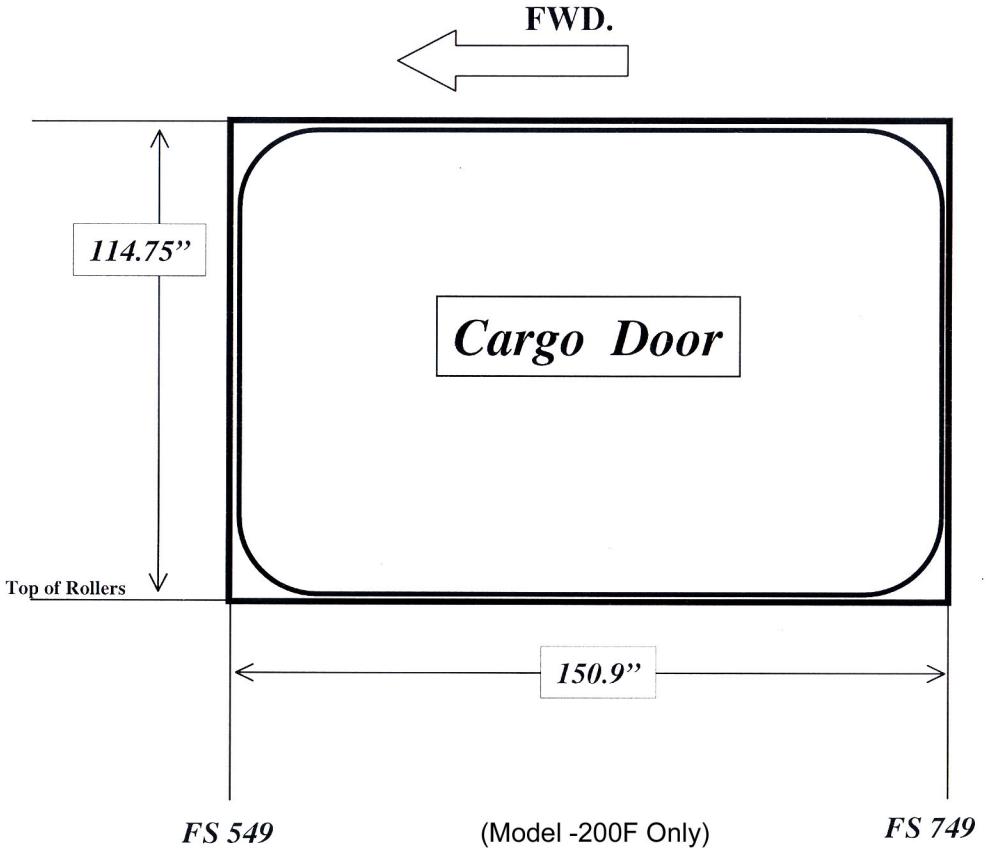
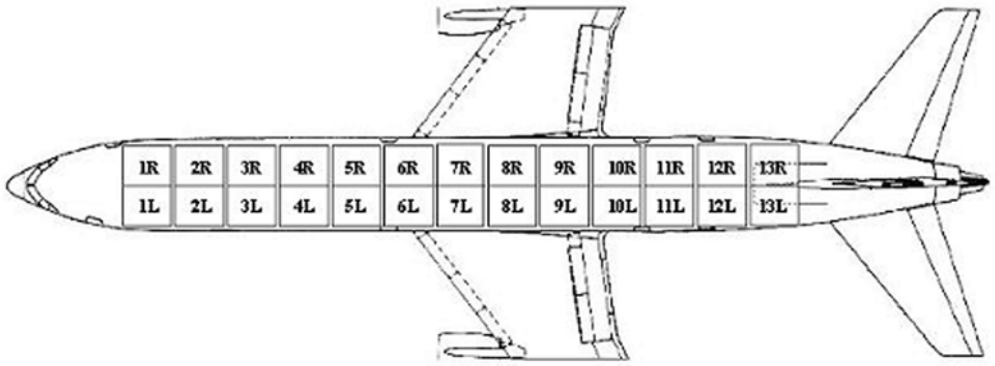


Figure 19. Maximum Individual Pallet Loads. (Models L-1011-200-F)



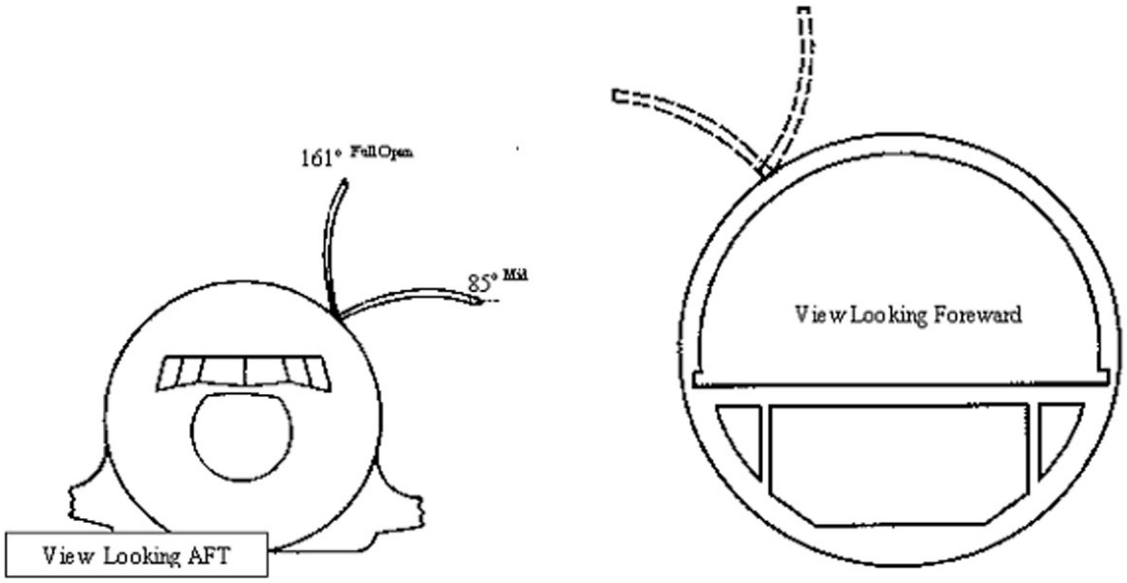
Configuration C

Pallet Position		Max Gross Weight Per Pallet *	CG ARM Fls. Sta.
1L	1R	3200	415.5
2L	2R	6500	524.5
3L	3R	6300	651.5
4L	4R	6400	760.5
5L	5R	6500	869.5
6L	6R	6500	978.5
7L	7R	6500	1087.5
8L	8R	6500	1196.5
9L	9R	6500	1305.5
10L	10R	6500	1414.5
11L	11R	6500	1523.5
12L	12R	6500	1632.5
13L	13R	6450	1741.5

L-1011 -200 ONLY

** The Gross weight includes the tare weight of the pallets and nets.*

Figure 20. Main Deck Cargo Loading Door. (Models L-1011-200-F only)



ROGER A. BRADY, Maj Gen
Director of Operations

ATTACHMENT 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

Abbreviations and Acronyms

ABC—aft. bulk compartment

ACL—Allowable Cargo/Cabin Load

AESS—Aeromedical Evacuation Ship Set

AFB—Air Force Base

AFR—Air Force Regulation

AGL—Above Ground Level

TALCE—Tanker Airlift Control Element

ALCS—Airlift Control Squadron

ALS—Airlift Squadron

AMC—Air Mobility Command

AMCOS—Air Mobility Combat Operations Staff

AMCP—Air Mobility Command pamphlet

AMCR—Air Mobility Command regulation

APC—Armored Personnel Carrier

APS—Aerial Port Squadron

ASD—Aeronautical Systems Division

ATA—Air Transport Association

AW—Airlift Wing

BL—Butt Line

CB—Center of balance (or center of gravity)

CCE—Commercial Construction Equipment

CF/F—Convertible Freighter Or Freighter

CFR—Code of Federal Regulations

CG—Center Of Gravity (Or Center Of Balance)

CIV—Civilian/Civil

CL—Center Line

CLL—Center Lower Lobe

COMBI—Combination

COMM—Commercial

CONF—Configuration

CRAF—Civil Reserve Air Fleet

CU FT—Cubic Feet

DDT—Double Dual Tandem Type Landing Gear (B-747 etc.)

DIST—Distance

DOD—Department of Defense

EST.—Estimate

ELEV—Elevator

FAA—Federal Aviation Administration

FAR—Federal Aviation regulation

FLL—Forward Lower Lobe

FS—Flight Station Or Fuselage Station

GACL—Guaranteed Allowable Cabin (Or Cargo) Load

HGT—Height

HQ—Headquarters

IATA—International Air Transport Association

IN.—Inches

JSCP—Joint Strategic Capabilities Plan

LAT.—Laterally

LBL—Left Butt Line

LCN—Load Classification Number

LONG—Longitude

LOX—Liquid Oxygen

LOSS—Liquid Oxygen Subsystem

MAC—Mean Aerodynamic Chord

MAX—Maximum

MHE—Material Handling Equipment

MIL—Military

MOS—Medical Oxygen Subsystem

MSU—Multi-Servicing Unit

MTMC—Military Traffic Management Command

MTOW—Maximum Take Off Weight

MLW—Maximum Landing Weight

MZFW—Maximum Zero Fuel Weight

N/A—Not Applicable

NM—Nautical Mile (Statute Mile X 1.15)

OEW—Operating Empty Weight

OL—Operation Location

PAX—Passenger

PDO—Publications Distribution Office

PLF—Pounds Per Linear Foot

PLI—Pounds Per Linear Inch

PLS—Patient Loading System

PP—Pallet Position

PSF—Pounds Per Square Foot

PSI—Pounds Per Square Inch

RBL—Right Butt Line

RWY—Runway

SBTT—Single-Belly Twin Tandem Landing Gear (DC-10, KC-10 etc.)

S/T—Short Ton (2,000 lbs.)

SPR—Single Point Refueling

STN—Station

TACC—Tanker Airlift Control Center

TAW—Tactical Airlift Wing

TO—Technical Order

T/O—Takeoff

TT—Twin Tandem (DC-8, B757, B767)

UKN—Unknown

WDT—Width

WBEL—Wide Body Elevator Loader

WL—Water Line

WRSK—War Readiness Spares Kit

WT—Weight

ZFW—Zero Fuel Weight

ATTACHMENT 2

INTERNATIONAL CARGO AND PASSENGER PLANNING FACTORS

Table A2.1. CRAF LONG-RANGE INTERNATIONAL CARGO PLANNING FACTORS

Aircraft Type	Maximum ACL (s/t)	Pallets	Range with Maximum ACL (nautical mi)	Maximum ACL (s/t) per Leg Length (nautical mile)				Ferry Range No Cargo (nautical mi)
				2,000	2,500	3,000	3,500	
A300-600F	56.6	15	1,800	54	52.5	46	40	4,450
B-757-200F	43	13	3,600	43	43	43	43	4,850
B-767-300F	65.9	26	3,500	65.9	65	65.9	65.9	7,150
DC-8-55F	43.8	13	2,400	43.8	42.5	37	31.5	4,700
DC-8-62F	44	14	3,500	44	44	44	44	5,600
DC-8-62 Combi	36	10	3,450	36	36	36	35.5	5,700
DC-8-63F	55	18	2,250	55	52.3	47.5	42.8	4,600
DC-8-71F	48.5	18	2,300	48.5	45	38.5	32.3	4,700
DC-8-73F	54.3	18	2,500	54.3	54.3	50.3	43.5	4,800
B-747-100F	106.5	33	3,200	106.5	106.3	106.5	99.8	6,800
B-747-200F	120	33	3,200	120	120	120	112	7,900
B-747-300F	116	33	3,100	116	116	116	113.5	7,900
B-747-400F	129.7	33	3,800	129.7	129.7	129.7	129.7	8,650
DC/MD-10-10F	69.3	30	2,000	69.3	61.25	54.6	46.7	4,200
DC-10-30CF	71.8	30	3,000	71.8	71.8	71.8	69.5	6,700
DC/MD-10-30F	83.1	30	3,600	83.1	83.1	83.1	83.1	6,700
MD-11CF	89	35	4,500	89	89	89	89	7,800
MD-11F	96	35	3,750	96	96	96	96	7,800
L-1011-200F	63	26	2,600	63	63	55.5	48.5	3,750

NOTE: **Ferry Range is distance the aircraft can fly with no cargo**

Table A2.2. CRAF LONG-RANGE INTERNATIONAL PASSENGER PLANNING FACTORS

Aircraft Type	Maximum Seats (Troops)	Range with Maximum Troops (NM)	Maximum Troops per Leg Length (NM)				Ferry Range No Troops (NM)
			2,000	2,500	3,000	3,500	
A-300-600ER	138	3,200	138	138	138	120	4,260
B-757-200	127	2,300	127	120	103	85	4,400
B-757-200ER	131	3,175	131	131	131	116	4,700
B-757-300ER	166	2,700	166	166	150	126	4,400
DC-10-10	222	2,300	222	201	150	100	4,000
DC-10-30	235	3,900	235	235	235	235	5,800
DC-10-40	222	2,750	222	222	203	160	4,875
DC-10-40J	219	3,200	219	219	219	195	4,856
MD-11	233	5,000	233	233	233	233	6,800
MD-11ER	338	4,500	338	338	338	338	6,800
B-747-100	394	2,900	394	394	365	313	6,600
B-747-200	365	3,800	365	365	365	365	7,600
B-747-400	295	6,250	295	295	295	295	8,650
B-767-200	149	2,450	149	145	120	98	7,500
B-767-200ER	161	3,650	161	161	161	161	7,700
B-767-300	186	3,375	186	186	186	167	6,800
B-767-300ER	213	3,500	213	213	213	213	7,200
B-767-400ER	232	3,500	232	232	232	232	6,500
B-777-200	250	4,200	250	250	250	250	9,200
B-777-200ER	263	5,515	263	263	263	263	9,500
L-1011-50	225	2,300	225	215	183	140	4,000
L-1011-100/150	230	2,900	230	230	220	174	4,400
L-1011-500	223	4,100	223	223	223	223	6,000

NOTE: **Troop weights are calculated at 400 pounds each, which includes personal equipment and field gear for combat operations.**